

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number
WO 2005/039067 A1

(51) International Patent Classification⁷: **H04B 1/707,**
G06F 17/15

(21) International Application Number:
PCT/SE2004/001431

(22) International Filing Date: 7 October 2004 (07.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03023369.6 16 October 2003 (16.10.2003) EP

(71) Applicant (for all designated States except US): SAAB AB
[SE/SE]; S-581 88 Linköping (SE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): OPPERMAN, Ian
[FI/FI]; Tutkijantie 2E, Linnanmaa, FIN-Oulu (FI).

(74) Agents: WIHLSSON, Joakim et al.; Bjerkéns Patentbyrå
KB, Östermalmsg. 58, S-114 50 Stockholm (SE).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

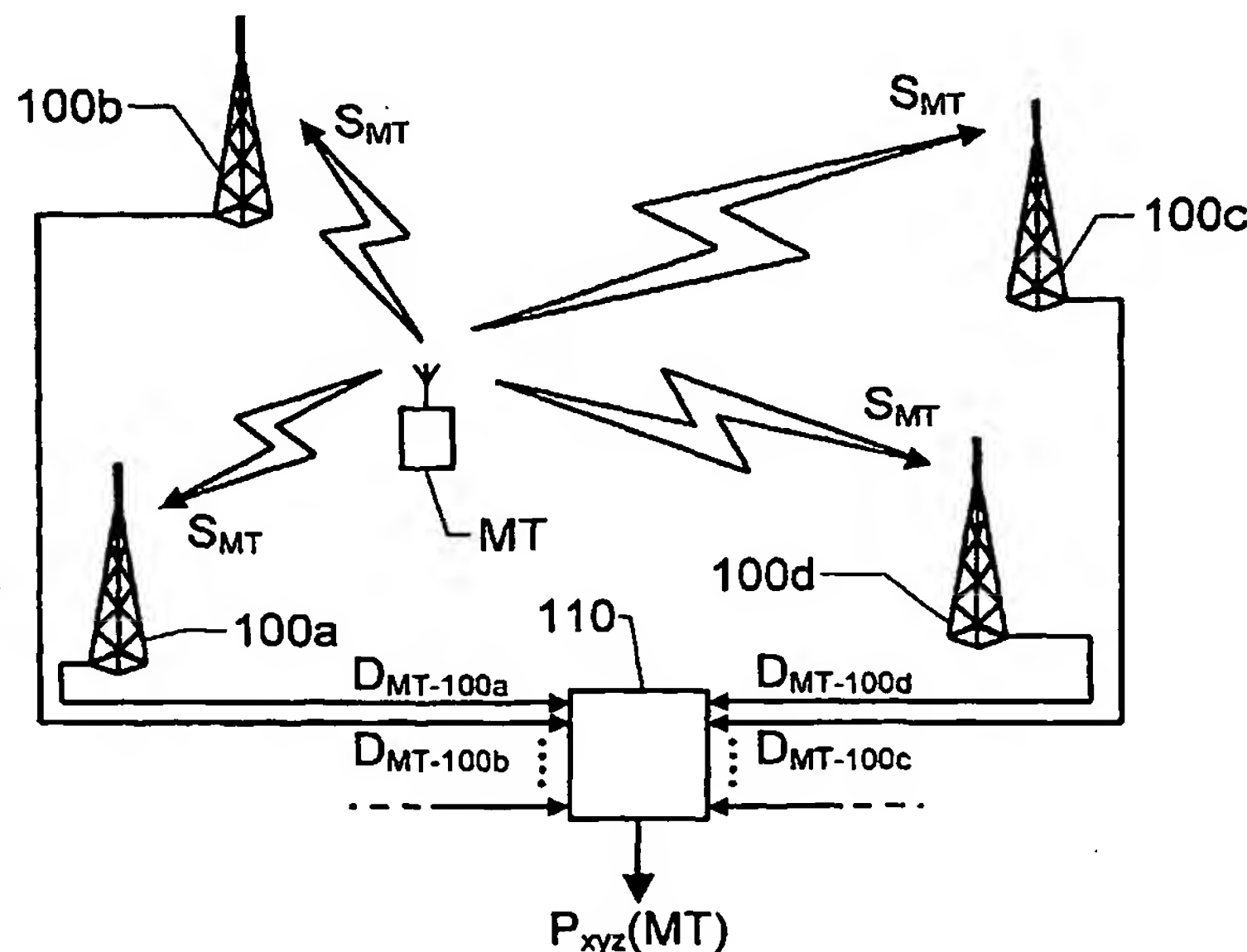
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: RADIO SIGNAL POSITIONING



(57) Abstract: The present invention relates to positioning of a mobile signal transmitter (MT), wherein a respective distance ($D_{MT-100a}$ - $D_{MT-100d}$) between the transmitter (MT) and each of a plurality of sensors (100a-100d) is determined based on a direct sequence spread spectrum signal (S_{MT}). A transmitter delay of the signal (S_{MT}) is estimated with high accuracy by, in each sensor (100a-100d), cross-correlating an over-sampled representation of the signal (S_{MT}) with an appropriate local spreading sequence (S_{PP}), which contains poly-phased symbol values being different from a set of symbols in the direct sequence used to spread the transmitted signal (S_{MT}). The local spreading sequence (S_{PP}) has a nominal chip period, which is equivalent to the chip period of the over-sampled representation of the signal (S_{MT}).